WHAT IS CLAIMED IS:

1. An apparatus comprising:

5      first, second, and third memories for storing, respectively, a received signal comprising a sequence of symbols generated from a noise-free signal by a channel that introduces noise, information specifying the probability that a symbol having a value I was converted to a symbol having a value J by said channel, and information specifying a signal degradation function that measures signal degradation resulting from a symbol having the

10     value I being replaced by symbol having a value J;

a controller that generates a processed signal from said received signal by replacing symbols in said received signal, wherein said controller replaces each symbol having a value I in a context of that symbol in said received signal with a symbol having a value J if said

15     replacement is estimated to reduce the overall signal degradation in said processed signal relative to said noise-free signal as measured by said signal degradation function, said context comprising a sequence of symbols having fixed values and in a predetermined location with respect to said symbol being replaced.

20     2. The apparatus of Claim 1 further comprising a fourth memory for storing a first list having the identity and number of occurrences of each sequence of a first length within said received signal.

3. The apparatus of Claim 1 wherein said controller utilizes said information in said

25     second memory to estimate the number of occurrences of each symbol value in said noise-free signal that was converted by the channel to a symbol having said value I and having said context in said received signal.

4. The apparatus of Claim 3 wherein said controller estimates degradation with

30     respect to said noise-free signal when setting all values of symbols with said context to J and selects that J which minimizes the estimated degradation.

5. The apparatus of Claim 2 wherein said fourth memory also stores a second list having the identity and number of occurrences of each sequence of a second length within said received signal, wherein said second length is less than said first length.

6. The apparatus of Claim 5 wherein said context is chosen from one of said first and second lists, said choice depending on said number of occurrences for sequences in said first list and said second list.

7. A method for processing a received signal comprising a sequence of symbols that has been generated from a noise-free signal by a channel to generate a processed signal, said method comprising:

storing said received signal;

storing channel corruption information specifying the probability that a symbol having a value I will be converted to a symbol having a value J by said channel;

storing information specifying a signal degradation function that measures the signal degradation that occurs if a symbol having the value I is replaced by symbol having a value J; and

generating said processed signal by replacing each symbol having a value I in a context of that symbol in said received signal with a symbol having a value J if said replacement is estimated to reduce the overall signal degradation in said processed signal relative to said noise-free signal as measured by said signal degradation function, said context comprising a sequence of symbols having fixed values and in a predetermined location with respect to said symbol being replaced.

8. The method of Claim 7 further comprises storing a first list having the identity and number of occurrences of each sequence of a first length within said received signal.

9. The method of Claim 7 wherein said channel corruption information is used to estimate the number of occurrences of each symbol value in said noise-free signal that was

converted by the channel to a symbol having said value I and having said context in said received signal.

10. The method of Claim 9 wherein said degradation is estimated with respect to said noise-free signal by setting all values of symbols with said context to J and selects that J which minimizes the estimated degradation.

11. The method of Claim 8 further comprises storing a second list having the identity and number of occurrences of each sequence of a second length within said received signal, wherein said second length is less than said first length.

12. The method of Claim 11 wherein said context is chosen from one of said first and second lists, said choice depending on said number of occurrences for sequences in said first list and said second list.

13. A computer readable medium encoded with a data processing program for processing a received signal comprising a sequence of symbols that has been corrupted by a channel to generate a processed signal, said data processing program causing a data procession system

to store said received signal;

to store channel corruption information specifying the probability that a symbol having a value I will be converted to a symbol having a value J by said channel;

to store information specifying a signal degradation function that measures the signal degradation that occurs if a symbol having the value I is replaced by symbol having a value J; and

to generate said processed signal by replacing each symbol having a value I in a context of that symbol in said received signal with a symbol having a value J if said replacement is estimated to reduce the overall signal degradation in said processed signal relative to said received signal as measured by said signal degradation function, said context

comprising a sequence of symbols having fixed values and in a predetermined location with respect to said symbol being replaced.

14. The computer readable medium of Claim 13 wherein said data processing program further causes said data processing system to store a first list having the identity and number of occurrences of each sequence of a first length within said received signal.

15. The computer readable medium of Claim 13 wherein said channel corruption information is used to estimate the number of occurrences of each symbol value in said noise-free signal that was converted by the channel to a symbol having said value I and having said context in said received signal.

16. The computer readable medium of Claim 14 wherein said data processing program further causes said data processing system to store a second list having the identity and number of occurrences of each sequence of a second length within said received signal, wherein said second length is less than said first length.

17. The computer readable medium of Claim 16 wherein said context is chosen from one of said first and second lists, said choice depending on said number of occurrences for sequences in said first list and said second list.